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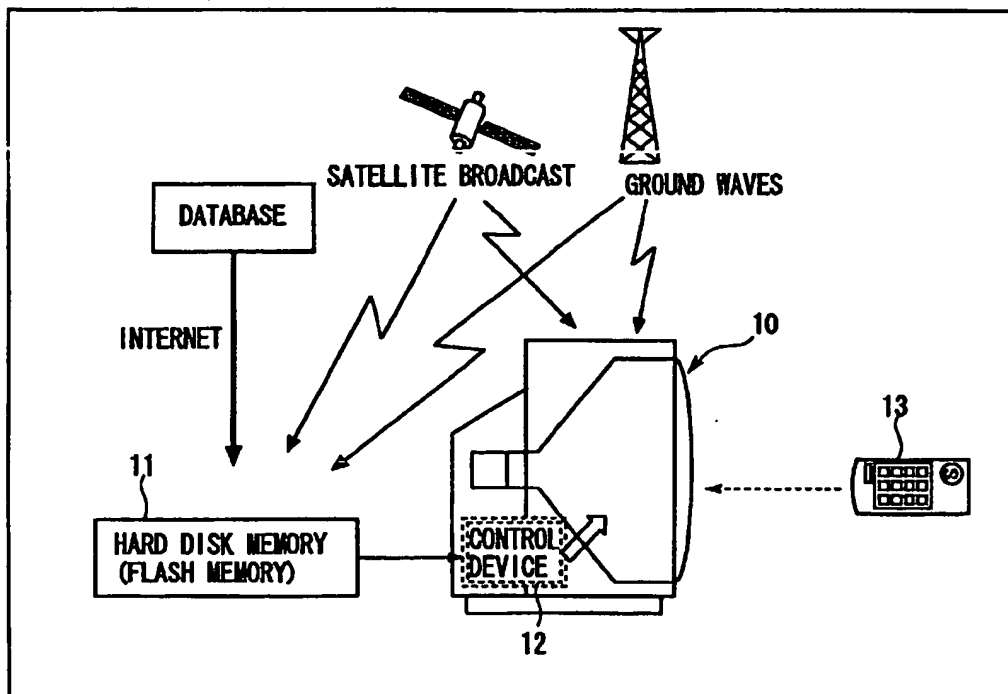
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(54) Title: TELEVISION PROGRAM BROADCASTING METHOD, TELEVISION RECEIVER, AND MEDIUM



(57) Abrégé/Abstract

A commercial suitable for the audience is presented in the form of a sharp image. Television programs (program R, program S) are stored in a hard disk (11) in advance. Television commercials (commercial a, commercial b,...) suitable for the audience are selected from among a plurality of types of television commercials transmitted from companies according to information about the audience registered in advance by the audience, and stored in the hard disk memory (11). Stored television commercials to be broadcast during a television program are inserted to produce a television program (20). Each viewer selects a program that the viewer likes by operating a remote controller (13) or the like and views a television commercial suited for the viewer together with the television program.

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### Abstract

A sharp-image commercial suited to each viewer is provided. TV programs (a program R and a program S) are previously accumulated in a hard disk 11. A TV commercial (a commercial a, a commercial b,...) suited to the viewer is selected from among plural categories of TV commercials transmitted from respective enterprises, corresponding to pre-registered information on the viewer, and is accumulated in the hard disk memory 11. The TV commercial accumulated as a TV commercial televised in an interval of a TV program is inserted to edit a program 20. The viewer is able to watch the TV commercial suited to the viewer himself or herself together with the TV program by selecting the favorite program 20 by operating a remote controller 13 etc.

## DESCRIPTION

## TV PROGRAM BROADCASTING METHOD, TV RECEIVER AND MEDIUM

Technical Field

5           The present invention relates to a television program  
broadcasting method and a television receiver for automatically  
selecting and broadcasting a TV program accumulated on a storage  
medium within the TV receiver in accordance with a taste of a  
viewer.

10

Background Arts

Digital-waves-based satellite broadcasts have recently  
been spreading in TV broadcasts. Japan has TV receivers counted  
in between ten and twenty millions. The digital waves involve  
15 the use of transmission radio waves in a band of much higher  
frequencies than those of transmission radio waves in the  
conventional UHF or VHF band. Further, the TV broadcasts of  
the ground waves are on the verge of being televised through  
on the digital waves. In the digital-waves-based TV broadcasts,  
20 the viewer needs searching for a broadcast suited to a viewer's  
own taste from a multiplicity of TV programs that are broadcast.

Moreover, commercials televised together with the  
multiplicity of TV programs are broadcast regardless of the  
tastes of the viewers. As far as the viewer does not change  
25 a TV channel, the viewer watches the commercial as its content  
transmitted from a transmitter shows. On the viewer side,  
however, it is desirable that only the commercials congenial

to the tastes of the viewers or necessary for the viewers be broadcast. The present applicant already filed an application for a method (Japanese Patent Application No.10-303285) that will hereinafter be explained as a method of enabling the viewer  
5 to watch only contents congenial to the taste of the individual viewer.

According to this method, for instance, the individual viewer registers beforehand family's or viewer's own characteristic data. Then, the commercial congenial to the  
10 taste of the viewer or the necessary commercial based on the characteristic data is automatically broadcast.

The characteristic data registered by the viewer means family members, an age, tastes etc of the viewer. A method of registering these pieces of data includes a method by which the  
15 viewer directly registers the data by use of a register and a method of transferring the data to a specified agency and registering the data in a database of the agency.

In the case of the direct registration by the viewer, the viewer registers the characteristics of each home, e.g., an  
20 address, family members, an age, tastes etc by use of the remote controller 13 etc of the TV set. Then, a unique code for selecting the commercial suited to this home on the basis of those pieces of data, is determined. This unique code is recorded on a memory of the TV receiver.

25 In the case of registering in the database, as shown in FIG. 3, the data characteristic of the individual viewer, e.g., a resident location of each home, family members, an age and

a hobby of the individual, a member club, a name of card possessed and others, are registered in a specified agency and accumulated in a database 31. The agency, based on these pieces of registered data, transmits a unique code for selecting the commercial suited to each home to the TV receiver of each home via the Internet.

FIG. 4 is a schematic diagram showing how the commercials each different depending on the homes, i.e., the differences between the data registered by the respective homes, are selected from among a plurality of transmitted commercials and then received.

The commercials having three different contents such as a type A, a type B and a type C are simultaneously transmitted in the form of commercial signals (CF) televised in the middle or broadcasting a TV program P. With respect to the TV signals in FIG. 4, pictures in respective fields of the three different commercials are consecutively arranged in sequence. An assumption in FIG. 4 is that a family E, a family F and a family G watches the same TV program P. Then, an optimal commercial is selected from among the three commercials in accordance with the characteristic data registered and received by each of the receivers in the respective homes.

Note that if the commercial of the type A is selected, only the field picture relative to the type A is extracted from within the commercial signals consecutively arranged in sequence. The extracted picture is temporarily stored in the memory in the receiver and is, after executing an interpolation picture process (e.g., a prediction or motion compensation etc using

pixels of the same frame picture or front and rear frame pictures) between the fields, projected on the TV screen. In the example in FIG. 4, the commercials are different corresponding to the characteristic data registered by the respective homes. For  
5 example, the home E, the home F and the home G select and receive the different commercials such as the type A, the type B and the type C, respectively.

Next, FIG. 5 shows one mode in which the commercials are previously selected, received and stored on the storage medium  
10 incorporated into the TV receiver 10 itself, and are televised as the commercials broadcast in the intervals of the program.

In the example in FIG. 5, for transmitting the commercials suited to the respective homes in accordance with diversified tastes of the viewers, an increased number of categories of the  
15 commercials and differences in contents of the commercials between the local areas, a plurality of commercials (CF) L, M, N are transmitted beforehand as data broadcasts to the respective homes E, F and G.

The plurality of commercials L, M, N are transmitted  
20 beforehand to the respective homes via digital lines used for the data broadcasts. The plurality of commercials L, M, N contain preset distinction data (e.g., a broadcast starting time of the commercial, a local area code etc). Then, the commercials corresponding to the characteristic data pre-registered by the  
25 respective homes E, F, G are selected, received and stored on storage mediums 33, 34, 35 incorporated into the respective TV receivers. Then, the commercial stored is televised in an

interval of a TV program Q instead of the original commercial  
televised in the interval of the program in accordance with the  
distinction data preset in the commercial. The respective  
commercials are stored on the storage mediums, corresponding  
5 to the characteristic data set in the homes. Therefore, the  
different commercials L, M, N suited to the individual homes  
are projected on the screens thereof at the same commercial time  
in the homes E, F, G where the families watch the same program.

The method of selecting and receiving the commercials  
10 congenial to the tastes of the viewer in the mode described above,  
however, needs executing such a video process as to sequentially  
insert different video signals into the TV signals televised.  
This method has a technically difficult point in terms of a  
processing time etc and also has a defect such as being hard  
15 to see the picture after being processed, and so on. This method  
is called as selective receipt or selective receiving.

Herein, the selective receipt implies a method of selecting  
an arbitrary commercial from among plural categories of  
commercials transmitted from the transmitter and receiving this  
20 commercial, and using it as a commercial televised in the interval  
of the TV program by executing the predetermined video process.

Further, the TV program includes, in addition to the normal  
TV program and commercial, the video signals such as video mails  
etc edited beforehand by the transmitter side. The program means  
25 a TV program edited using the TV program and the commercial or  
the video mail etc. Moreover, the TV program, the commercial  
and the program are generally called contents. Further, the

program may also be called a program content.

Disclosure of the Invention

The present invention aims at providing a TV program  
5 broadcasting method capable of automatically selecting a  
commercial congenial to a taste of an individual viewer, and  
broadcasting the latest and sharp picture.

To accomplish the above object, according to the  
invention claimed in claim 1, a memory (11) in a television  
10 receiver (10) is stored with a television program of a digital  
broadcast received, a program in a fixed period of time is edited  
by synthesizing with other television program, and the edited  
program is repeatedly broadcast.

The broadcast connoted herein is, however, a concept  
15 implying that the program stored previously in the memory (11)  
is reproduced and displayed on the TV receiver (10).

Further, to accomplish the above object, according to the  
invention claimed in claim 2, the other television program is  
a commercial.

20 Moreover, to accomplish the above object, according to  
the invention claimed in claim 3, the other television program  
is a commercial, and the commercial can be selected from among  
those stored beforehand in the memory (11) and can be replaced  
with a commercial in the synthesized program.

25 Still further, to accomplish the above object, according  
to the invention claimed in claim 4, the television program  
broadcasting method is carried out in an on-demand system.



Further, according to the invention claimed in claim 5, a television receiver (10) receiving digital broadcasting waves, has a memory (11) storing a plurality of first contents received, and a control unit (12), wherein the control unit (12), when  
5 receiving a second content, selects one or more contents from among the plurality of first contents on the basis of a predetermined criterion, outputs the selected first contents at a predetermined timing, and gets a program composed of the first content and the second content watched.

10 Preferably, the first content may be a commercial, and the predetermined criterion may be determined based on an attribute of a viewer.

Preferably, this television receiver may further has a timer informing of the predetermined timing.

15 Preferably, the control unit (12) may detect a piece of timing information informing of the predetermined timing from the digital broadcasting waves.

Moreover, according to the invention claimed in claim 9, a television receiver (10) receiving digital broadcasting waves,  
20 has a memory (11) storing a content of a digital broadcast received, and a control unit (12), wherein the control unit (12) edits a program content by synthesizing a first content with a second content, and, gets the program content watched repeatedly.

Preferably, the memory (11) may further store relating  
25 information that relates the first content and the second content to each other, and the control unit (12) may synthesize the first content with the second content in accordance with the relating

information. Herein, the relating information is, if the first content is, e.g., the commercial, a code indicating an advertiser who requests for this commercial. Namely, a proper commercial is selected from among the commercials of the same advertiser  
5 and synthesized with the second content.

Preferably, the memory (11) may further store a selecting criterion for selecting the first content, and the control unit (12), based on this selecting criterion, may select one or more contents from among a plurality of first contents stored  
10 beforehand in the memory, and may synthesize the selected contents with the second content.

Preferably, the first content may be a commercial, the second content may contain a commercial, the memory (11) may store a selecting criterion for selecting one or more commercials  
15 from among a plurality of commercials, and the control unit (12), based on this selecting criterion, may select one or more commercials from among the plurality of commercials stored beforehand in the memory, and may replace the commercial contained in the second content with the selected commercial.  
20 Herein, the selecting criterion may be set based on, for instance, the attribute of the viewer.

According to the present invention, there is provided a readable-by-computer recording medium recorded with a program executed by a computer to provide the functions described above.

25 As described above, according to the inventions claimed in claims 1 and 2, the program is edited by synthesizing the programs accumulated beforehand with each other and then

broadcast, and hence there is no necessity of executing such a conventional video process as to sequentially insert the different video signals into the TV signals televised. It is therefore possible to facilitate the technical process and  
5 provide the sharp picture.

Further, according to the invention claimed in claim 3, the plurality of commercials are previously accumulated in the memory, the commercial suited to the viewer is properly selected therefrom, and a content of the commercial is updated, whereby  
10 the commercial more suited to the viewer can be provided.

Further, according to the invention claimed in claim 4, the program is selected from among the plurality of TV programs accumulated and can be watched anytime, and a watching count of the viewer increases, whereby it is feasible to provide the  
15 viewer with the information of the commercials provided from a larger number of enterprises.

Moreover, according to the present invention, a sufficient time is given to the process of selecting the content in the selective display, and the sharp picture can be provided in a  
20 way that synchronizes the switchover of the content.

#### Brief Description of the Drawings

FIG. 1 is a view of an architecture, showing one mode in which signals are stored on a recording medium on a television  
25 receiver and are regenerated on a TV screen;

FIG. 2 is a schematic diagram showing how a program is edited by using a TV program and a commercial that are accumulated

according to a method of the present invention;

FIG. 3 is a diagram showing characteristic data of a viewer registered in a database by a conventional method;

FIG. 4 is a schematic diagram showing how commercials  
5 received from among a plurality of commercials in respective homes are different;

FIG. 5 is a diagram showing one mode in which the commercial stored on a storage medium of a TV receiver by the conventional method, is televised as the commercial in an interval of a program;

10 FIG. 6 is a view of a system architecture of a TV receiver in a second embodiment;

FIG. 7 is a diagram of an image of a transmission path through on digital waves;

FIG. 8 shows a data structure of a program table distributed  
15 to the TV receiver 10;

FIG. 9 shows a data structure of an advertiser/commercial table;

FIG. 10 shows a data structure of CF header information for managing a content of the commercial;

20 FIG. 11 shows an example of an analytic result of a cluster analysis about tastes of dietary habits;

FIG. 12 is a flowchart showing processes of a timer startup process;

FIG. 13 is a flowchart showing processes of a selective  
25 display process;

FIG. 14 is a diagram of an image of the transmission path through on the digital waves in a modified example of the second

embodiment;

FIG. 15 is a flowchart showing processes by a replacement control unit 54 in the modified example of the second embodiment;

FIG. 16 is a flowchart showing a procedure of a program synthesizing process in a third embodiment; and

FIG. 17 is a flowchart showing a procedure of the program synthesizing process in a modified example of the third embodiment.

#### 10 Best Mode for Carrying out the Invention

Embodiments of a television program broadcasting method according to the present invention will hereinafter be described with reference to the accompanying drawings.

##### <<First Embodiment>>

15 A first embodiment of the present invention will hereinafter be described referring to FIGS. 1 and 2.

##### <Architecture>

FIG. 1 is a view of an architecture, showing one mode in which television (TV) signals transmitted are stored in a storage medium built in a television receiver 10 and are regenerated on a TV screen.

As shown in the Figure, the TV receiver 10 has a built-in control device 12 incorporating a large-capacity storage medium such as a hard disk memory (flash memory) 11 etc. Then, this  
25 hard disk memory 11 is accumulated with TV programs transmitted to specified viewers from a transmission side, programs of which recordings are reserved by the viewers and, in addition,

advertising information from commercials as a beginning to video mails of respective enterprises. These pieces of information are transmitted through BS (Broadcasting Satellite), CS (Communications Satellite) or on TV signals of ground waves as data broadcasting using digital lines. Then, the accumulated TV programs (television programs) are broadcast by use of specified channels. Further, a commercial to be broadcast in an interval of the program is properly selected by the control device 12 from among a plurality of commercials accumulated, and projected on the TV screen.

A user switches over receiving channels of normal TV programs and specified channels for broadcasting the accumulated TV programs by using a remote controller 13.

<Outline of Function>

FIG. 2 is a schematic diagram showing that the commercial to be broadcast in an interval of one single TV program is properly selected from among those accumulated in the hard disk memory 11 and then inserted, and a given program 20 is thus edited. The program 20 may be called synthesized program.

The hard disk memory 11 shown in FIG. 2 is provided within the TV receiver 10 of the viewer. This hard disk memory 11 is accumulated with the TV programs such as programs R, S etc and commercials a, b, c and others.

The TV programs accumulated therein are programs (which are herein the programs R) automatically accumulated in the hard disk memory 11 without any recording reservations of the viewers, and, in addition, the programs (which are herein the programs

S) recorded and accumulated as choices of the viewers. The program R is a program (a carousel type program) repeatedly broadcast by using the specified channel after being accumulated. The viewer is able to watch a program anytime by selecting a specified channel thereof with the remote controller 13 etc. Further, the viewer is able to watch the program from the beginning as he or she intends even in the middle of broadcasting the program R by providing, for example, a from-the-beginning button and pressing this from-the-beginning button. On the other hand, the viewer can reproduce the program S by performing a given operation of the remote controller 13 as in the case of recording on the conventional VTR.

Among the plurality of commercials televised, the commercials (a, b, c...) suited to the individual viewers are selected and received, and are accumulated in the hard disk memory 11. The selections of the commercials suited to the individual viewers are made based on pre-registered attribute data about the individual viewers. A category of the attribute data means an address, family members, an age, tastes of the viewer and so on. The viewer registers the attribute data directly in the TV receiver 10 of the viewer by using, e.g., a registering device (the remote controller 13 etc).

When the attribute data are inputted, the control device 12 determines a commercial selection code for selecting the commercials suited to the viewer, corresponding to the attribute data, and stores it in the hard disk memory 11. On the other hand, each commercial televised is given beforehand an

identification code for identifying a content of the commercial. This identification code is a code for identifying, e.g., an enterprise, its category, a televising time, a content of the broadcast and so on. Signals of the plurality of commercials  
5 televised are inputted to the control device 12. Then, the identification code is detected by a detection circuit provided in the control device 12. Further, a comparing circuit compares the identification code with the commercial selection code described above, thereby judging whether the identification code  
10 is suited to the viewer. As a result, only the commercials suited thereto are accumulated. A specific method of analyzing the digital signals is described in Japanese Patent Application Laying-Open Publication No.9-214875.

Given herein is a detailed explanation of how the  
15 commercials suited to the viewer are selected.

Now supposing that a certain car maker P is defined as a transmitter of the commercial, the car maker P simultaneously transmits plural categories of commercials. For instance, the first commercial is a commercial (a commercial a') having such  
20 a content as to enhance a dependency upon the car maker P. Further, the second commercial is a commercial (a commercial a) having such a content as to switch over a brand name to the car maker P from other makers, and so on.

While on the other hand, a viewer N is herein defined in  
25 a receiver side. The TV receiver 10 of the viewer N is stored with data about the viewer N as described above. Then, an assumption is that the viewer N owns a car of a maker other than



the maker P. Accordingly, data showing that the viewer N owns the car other maker is stored as car data about the viewer N. In this case, the hard disk memory 11 of the viewer N is accumulated with the commercial a having such a content as to switch over the brand name to the maker P from other makers among the plurality of commercials transmitted from the car maker P.

Further, when a foods maker Q as a transmitter televises commercials of Chinese noodles, the commercials of plural types of Chinese noodles preferred by the locals are edited and televised. Namely, there are simultaneously televised plural types of commercials such as a Chine noodle a la Tokyo (a commercial b), a Chine noodle a la Kansai (a commercial b'), a Chine noodle a la Kyushu (a commercial b'') and so on. On the other hand, data showing that the viewer N resides in Yokohama is stored as the data about the viewer N. Hence, in this case, among the plurality of commercials transmitted from the foods maker Q, the commercial of the Chine noodle a la Tokyo (the commercial b) is accumulated in the hard disk memory 11 of the viewer N.

This is because, for example, the Yokohamaites (citizens of Yokohama) and the Tokyoites (citizens of Tokyo) are categorized into the same cluster in terms of their dietary habits as a result of making a cluster analysis with respect to researches of questionnaires gathered beforehand.

Thus, the hard disk memories 11 of the individual viewers are accumulated with the commercials suited to the individual viewers among the commercials transmitted from the respective enterprises.

A program 20 consists of the program R (the first half of the program R and the second half of the program R) and the commercials a, b, c... accumulated in the hard disk memory 11. As shown in FIG. 2, the program R is, with the commercial inserted therein, sectioned into the first half of the program R and the second half of the program R. Then, the program R is repeatedly broadcast first time, second time and so forth. On the other hand, the commercial is inserted in an interval between the first half and the second half of the program R and inserted after the second half thereof each time the program R is broadcast. The type of the commercial inserted each time is predetermined by the transmitter. The control device 12 properly selects the commercial from among those accumulated in the hard disk 11 and inserts the commercial in the interval of the program or after the program. Namely, if the commercial to be inserted in the interval between the first half of the program R and the second half of the program R of the first time is the commercial of the car maker P, the commercial a for the car maker P accumulated in the hard disk memory 11 is selected and inserted. Further, if the commercial to be inserted after the second half of the program R broadcast first time is the commercial of the Chinese noodle of the foods maker Q, the commercial b accumulated in the hard disk memory 11 is selected based on a district where the viewer lives and then inserted.

25 In the discussion on the mode described above, a certain, TV program R accumulated is repeatedly broadcast by using the specified channel. The embodiment of the present invention is

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not, however, stuck to this mode. For example, the program R may be a TV program provided by an on-demand system. For instance, a plurality of TV programs are previously accumulated in the hard disk memory 11. In this case, the viewer is able  
5 to select a want-to-watch program from a program selection menu displayed on the screen by operating the remote controller 13 etc, and watch this program any time.

With respect to the commercial that is broadcast in the interval of the selected TV program, the commercial suited to  
10 the viewer is properly selected from among the commercials accumulated by the same method as the above-mentioned. Then, one program 20 is edited and broadcast.

Further, if the TV program accumulated in the hard disk memory 11 is the program S accumulated through the recording  
15 reserved by the viewer, the commercial accumulated in the hard disk memory 11 is selected based on the commercial already inserted in the interval of the program when recording. For instance, if the commercial of the car maker P is inserted in the program S when recording the program S, the commercial a  
20 accumulated as the commercial of the car maker P beforehand in the hard disk memory 11, is used to replace the commercial by the control device 12 and then broadcast. Namely, when the viewer watches the program S in a reproduced mode, it follows that the commercial a is broadcast as the commercial of the car maker  
25 P.

Note that the commercials accumulated in the hard disk memory 11 can be easily updated by re-televising from the

transmitter. Further, the viewer re-inputs the attribute data about the viewer himself or herself, thereby changing the category accumulated when updating the commercial. For example, if the viewer purchases a car of the maker P afresh, the viewer  
5 re-inputs the above data.

Note that a broadcasting station, an advertiser or an enterprise of an advertising agency etc may distribute the data to the viewers via the Internet etc instead of prompting the viewer to input the data for selecting such a commercial. Such  
10 an item of data may also be forcibly accumulated in the hard disk memory 11 irrespective of an intention of the viewer.

In the embodiment discussed above, the hard disk memory 11 incorporated into the TV receiver is used for accumulating the TV programs. The embodiment of the present invention is  
15 not, however, limited to this configuration. For instance, a hard disk connected from outside to the TV receiver may also be used. Further, a storage device of a home server connected via a network to the TV receiver may also be utilized.

This type of storage device is not confined to the hard  
20 disk and may involve the use of, for example, a semiconductor memory such as a flash memory and so on. Moreover, a demountable DVD-RAM and CD-RW etc may be used as mediums.

Further, the TV receiver may be a set-top box. Moreover, the digital broadcasting is not limited to the satellite  
25 broadcasting. For example, there may be received via a network of a cable TV.

<<Second Embodiment>>

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A second embodiment of the present invention will hereinafter be described with reference to FIGS. 6 through 15. What has been discussed in the first embodiment is the TV receiver 10 that provides the function by which the selectively received commercial a is combined and synthesized with the TV program R into one program 20, and the program 20 is stored in the hard disk memory 11 and repeatedly watched.

What will be explained in this embodiment is a TV receiver 10 in which the commercial contained in an on-watching TV program is replaced by a commercial accumulated beforehand in the hard disk memory 11. Other configurations and operations are the same as those in the first embodiment. Then, the same components are marked with the same numerals, and their explanations are omitted. Further, the drawings in FIGS. 1 through 5 will be referred to according to the necessity.

#### <System Architecture>

FIG. 6 is a diagram of a system architecture of the TV receiver 10 in this embodiment. This TV receiver 10 has a tuner 51 for receiving the digital waves, the hard disk memory 11 for accumulating contents of the digital waves received, a switcher 55 for selecting any one of the tuner 51 and the hard disk memory 11, a decoder 56 for decoding the content selected by the switcher 55, a monitor for outputting in image and sound (including voice) the output of the decoder 56, a replacement information management unit 52 for control of updating the contents in the hard disk memory 11, a built-in clock 53 for counting a time, and a replacement control unit 54 for controlling the switcher

55.

Note that the replacement information management unit 52, the built-in clock 53 and the replacement control unit 54 are incorporated into the control device 12 shown in FIG. 1.

5       The tuner 51 receives the digital waves and generates digital data. Among pieces of digital data generated, contents (which will hereinafter be called display contents) for providing TV programs, are transferred to the monitor normally via the switcher 55 and the decoder 56, and outputted (arrow line 101).

10       On the other hand, the tuner 51 receives, in addition to the display content, a replacement content 60 in a different band. This replacement content 60 is a commercial to be replaced with a commercial in a specified program. The replacement content 60 is previously broadcast before a replacing target  
15       program is broadcast.

The replacement content 60 is identified by a predetermined content code. The tuner 51 receives this replacement content 60, and stores the replacement content 60 in the hard disk memory 11 (arrow line 102).

20       Further, the broadcasting station repeatedly broadcasts partial replacement information 61 for a further replacement of the replacement content 60. The replacement information 61 contains a content code indicating a replacing target, and a version number identifying a replacement version. The hard disk  
25       memory 11 retains the replacement information 61 of the latest version for every content code of the replacing target among the received pieces of replacement information 61. The

replacement content 60 is thereby ever-updated to the latest state.

0085 On the other hand, the hard disk memory 11 includes an individual profile 62 inputted beforehand by the viewer.

5 The replacement control unit 54 within the TV receiver 10, when reaching a replacement start time, executes the followings:

(1) The information flowing to the decoder 56 is switched over to the hard disk memory 11 from the tuner 51 by controlling the  
10 switcher 55 (arrow line 104).

0092 (2) A content 60 suited to the viewer is selected from among the plurality of replacement contents 60 by referring to the individual profile 62.

(3) The hard disk memory 11 is commanded to flow the selected  
15 replacement content 60 to the switcher 55 (arrow line 105).

0094 The replacement information management unit 52 receives the replacement information 61 from the broadcasting station and stores the information 61 in the hard disk memory 11 (arrow line 103).

20 The switcher 55 selects any one a receiving signal from the tuner 51 and a reading signal from the hard disk memory 11, and transmits the selected signal to the decoder 56. The switcher 55 is a so-called multiplexer.

The decoder 56 generates TV signals from the digital signal  
25 in a predetermined format and outputs the TV signals to the monitor.

FIG. 7 is a diagram of an image of a transmission path

of the digital waves. This transmission path is configured by a band for the display content and a band for the replacement information. The replacement information 61 is repeatedly broadcast independently of the display content (which is referred to as a replacement information carousel).

<Data Structure>

FIG. 8 shows a data structure of a program table distributed through on the digital waves everyday to the TV receiver 10. Respective lines in this program table correspond to the contents configuring one single program. Each of the lines in this program table has a "start time" field, a "televising time" field and a "content code" field.

The starting time is a time when the broadcast of the content is started. The televising time is a continuous time of the content and expressed in a unit of second. The content code is a code for identifying the content. In this embodiment, two head characters of the content code indicate a category of the content.

For example, if the content code is SP001, the head characters "SP" indicate a sports program. Further, head characters "CF" of CF010 indicate that the content is a commercial.

Thus, the control device 12 recognizes that the content having the content code "SP001" is televised for 1800 seconds (30 minutes) from 0:00, and thereafter the commercial having the content code CF101 is televised for 120 seconds (2 minutes).

FIG. 9 shows a data structure of an advertiser/commercial



table. This table contains categories of the commercials  
televised by every advertiser and selection attributes  
(corresponding to a selecting criterion) of whether the  
commercial should be selected or not. FIG. 9 shows the commercial  
5 of, e.g., A Corp. as an advertiser designated by "CL0001".

As shown in FIG. 9, commercials of CF101, CF102, CF 103  
are prepared for the advertiser CL0001. Each of the lines in  
this advertiser/commercial table corresponds to one commercial  
(the advertiser code corresponds to related information). Each  
10 line contains a CF code and a plurality of selection attributes  
such as a selection attribute 1, a selection attribute 2 and  
others.

The CF code comes under one category of the content codes  
explained in FIG. 3. Namely, the CF code is the content code  
15 limited to the commercial.

The selection attribute indicates a viewer's attribute  
suited to the commercial concerned. The selection attribute  
is expressed by a couple of an attribute and an attribute value.  
For example, in the selection attribute 1 with respect to the  
20 CF code "CF101", information such as "Attribute:  
Already-purchased brand (product), Attribute value: Made by B  
Corp.", indicates that the commercial shown by CF101 is suited  
to the viewer who has already purchased the brand (product) made  
by B Corp..

25 Further, In the selection attribute 1 with respect to the  
CF code "CF103", information such as "Attribute: Address,  
Attribute value: Tokyo" indicates that the commercial shown by

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CF103 is suited to the viewer living in Tokyo.

The selection attributes are shown such as the selection attribute 1, the selection attribute 2 etc in sequence according to the higher priority. If the selection attribute is coincident  
5 between the plurality of commercials, it is not determined from this selection attribute which commercial should be selected. In such a case, the judgement is made based on the following selection attributes of the priority.

For example, CF103 and CF104 are coincident in their  
10 selection attributes 1 each showing "Attribute: Address, Attribute value: Tokyo". In this case, it may be determined from the selection attributes 2 which commercial should be selected.

FIG. 10 shows CF header information for managing the  
15 content of the commercial. The CF header information contains a CF code, an identification code, an advertiser code, a televising time, an advertising period and a pointer to the content.

The CF code, the advertiser code and the televising time  
20 are the same as those shown in FIG. 9. The identification code is used for judging a relationship with the advertiser. For instance, the viewer is given a commercial selection code corresponding to the viewer's attribute from a commercial manager such as the advertising agency etc. The TV receiver 10 selects  
25 only the commercial having the identification code coincident with the commercial selection code. The identification code is used for selective receiving process or selective display

process of the commercial described above.

The advertising period is an advertising period based on a contract with the advertiser. The pointer to the content is an address of the content in the hard disk memory 11, and points  
5 a head position of the content.

FIG. 11 shows an example of an analytic result of the cluster analysis of the dietary habits. This example is one instance where the results of questionnaires about tastes in the dietary habits are analyzed into clusters. In this example. A cluster  
10 1 includes Yokohama, Tokyo and Saitama.

This shows that the residents in Yokohama, Tokyo and Saitama exhibit similar characteristics in terms of their tastes in the dietary habits. This the same with other clusters. Accordingly, for example, if there are televised commercials  
15 of Chinese noodles a la Tokyo and Kyushu, it is determined that the commercial of the Chinese noodle a la Tokyo should be televised to the viewers living in Yokohama as well as to Tokyoites.

#### <Operation and Effects>

FIGS. 12 and 13 show a program executed by the replacement  
20 control unit 54. This program contains a timer startup process and a selective display process.

FIG. 12 is a flowchart showing processes of the timer startup process. This timer startup process, when booted, monitors a start of the program (S21).

25 The timer startup process, when detecting the start of the program from the header information of the display content, reads a televising time of the program from the program table

(S22).

Next, the timer startup process boots a selective display process (S23).

Next, the timer startup process starts up the timer by  
5 specifying the televising time as a measurement time (S24).  
Thereafter, the timer startup process returns the control to  
S21. Note that when the specified measurement time elapses,  
a timer interrupt occurs in the timer.

FIG. 13 is a flowchart showing processes of the selective  
10 display process. The selective display process at first refers  
to the built-in clock 53. Then, the selective display process  
reads from the program table a CF code of a commercial that is  
televised next to the on-broadcasting program at the present  
time (S31).

15 Next, the selective display process searches for a CF  
header having that CF code. Then, an advertiser code of that  
commercial is obtained from this CF header (S32).

Next, the selective display process reads the viewer's  
attribute from the individual profile 62 of the viewer concerned  
20 (S33). For example, an address, an age, a distinction of sex,  
an annual income, an already-purchased brand and tastes of the  
viewer, are read out.

Next, the selective display process, based on the viewer's  
attribute, determines the CF code of the proper commercial from  
25 the advertiser/commercial table (S34). This is a process of  
obtaining the CF code coincident with the viewer's attribute  
from the advertiser/commercial table.

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In this state, the selective display process waits for the timer interrupt (S35). When the timer interrupt occurs, the selective display process switches over the switcher 55 to the hard disk memory 11, and sends the commercial having the  
5 selected CF code to the decoder 56 (S36).

Next, the selective display process waits for the content of that commercial to be read out (S37). When finishing the readout of the commercial, the selective display process sets the switcher 55 back to the original state, and sends the content  
10 from the tuner to the decoder 56 (S38).

As described above, the TV receiver in this embodiment is capable of selecting the adequate commercial suited to the individual profile 62 of the viewer, and making the viewer watch it.

15 Further, this TV receiver 10 executes the process of selecting the commercial that should be selected from when starting the program. Then, the TV receiver 10, after determining the commercial that should be replaced, waits for the timer to count the time, switches over to this commercial.  
20 It is therefore possible to ensure the time sufficient for selecting the commercial and avoid both a deterioration of the image and a deficiency of the processing time due to the switchover.

<Modified Example>

25 The TV receiver 10 in the embodiment discussed above previously obtains, as shown in FIG. 13, the CF code of the proper commercial from the individual profile 62 of the viewer and from

0112

the advertiser/commercial table. Then, this TV receiver 10 waits for the timer to count the time, and replaces the content of the previous commercial with the content of this commercial. The embodiment of the present invention is not, however, limited to this procedure.

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For example, the replacement timing may be indicated by the broadcasting station. FIG. 14 is a diagram of an image of the transmission path of the digital waves on which such an indication is transmitted. In addition to the normal program contents and the replacement information carousel, a replacement timing carousel is further transmitted through this transmission path. The TV receiver 10 can ensure a sufficient processing time for the replacement by controlling the transmission timing of this replacement timing carousel.

FIG. 15 shows a process of the replacement control unit 54 in that case. In this process, two types of replacement timing carousels are used. The first carousel is a replacement timing carousel 1 for starting the process of obtaining a replacement advertisement. The second carousel is a replacement timing carousel 2 for giving a command of a timing of switching over the switcher 55.

In this process, the replacement control unit 54 at first waits for receiving the replacement timing carousel 1 (S40).

When receiving the replacement timing carousel 1, the replacement control unit 54 obtains the replacement advertisement (S41). This process is the same as the process in S31 through S34 in FIG. 13, and hence its explanation is omitted.

Thereafter, the replacement control unit 54 waits for receiving the replacement timing carousel 2 (S42).

When receiving the replacement timing carousel 2, the replacement control unit 54 switches over the switcher 56 (S46).

5 The processes thereafter are the same as those FIG. 13, and hence their explanations is omitted.

Thus, the sufficient time for selecting the commercial to be replaced can be given to the TV receiver 10 by adjusting an interval between the replacement timing carousels 1 and 2.

10 As a result, the problems in terms of the deterioration of the image and the processing speed can be avoided.

There have been shown the processes (S31 through S33 in FIGS. 13) of replacing one commercial in the processes of the selection/displacement process in the replacement of the commercial.

15 The embodiment of the present invention is not, however, limited to this procedure. If one program is composed of a plurality of segments, the present invention can be embodied also in a case where one program is segmented into, for example, first through fourth quarters, and the commercial is televised at the  
20 end of every quarter.

For instance, if each quarter as an independent content is given a content code, each quarter is defined as an independent line shown in FIG. 8. Therefore, the program is managed in such a form that one commercial is televised for one content, and  
25 the replacement of the commercial can be executed as shown in FIG. 13.

Further, for example, if each quarter is not treated as

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the independent content, the control may also be done so as to repeat the processes in S31 through S33 in FIG. 13.

The TV receiver 10 in the embodiment described above detects the starting point of the program, indicates the timer to count the televising time of the program, and thus obtains the replacement timing. Further, the TV receiver 10 in the modified example explained above detects such a replacement timing by receiving the replacement timing carousel. The embodiment of the present invention is not, however, limited to this procedure.

For example, the present time is read from the built-in clock 53, the commercial televised within the predetermined time is read out of the program table, and the processes in FIG. 12 and 13 may be started up with respect to this commercial. A schedule management program for periodically doing such a startup may be executed by the control device 12.

In this case, the broadcasting station may inform of a time signal so as not to cause a large margin of error between the time of the built-in clock and the broadcasting time. With this contrivance, the commercial can be replaced without detecting the start of the program.

Further, the detection of the replacement timing carousel may be combined with the time counting by the timer. For instance, there may be a wait for the timer interrupt (S35 in FIG. 13) instead of waiting for receiving the replacement timing carousel 2 (S42).

In the embodiment described above, the advertiser code

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is used as the information that relates the plurality of commercials to be replaced. Then, the commercial in the program is replaced by the commercial selected from among the commercials belonging to the same advertiser. The embodiment of the present invention is not, however, limited to this procedure. For example, the commercial suited to the viewer may be selected irrespective of the advertiser.

<<Third Embodiment>>

A third embodiment of the present invention will hereinafter be explained with reference to FIGS. 16 and 17. The discussion in the first embodiment has been put on the TV receiver 10 in which the commercial a selectively received is inserted in the TV program R and synthesized into one single program 2, and the program 2 is stored in the hard disk memory 11 and repeatedly watched.

Further, the discussion in the second embodiment has been put on the TV receiver 10 in which the commercial is replaced immediately before watching the program.

This embodiment will explain the TV receiver 10 in which the configuration in the first embodiment is combined with the configuration in the second embodiment. Namely, the TV receiver 10 in this embodiment selects the commercial according to an individual profile 62 of the viewer, previously synthesizes a program by replacing the commercial contained in the program with the selected commercial, and reproduces it repeatedly. Other configurations and operations are the same as those in the first and second embodiments. This being the case, the

drawings in FIGS. 1 through 15 will be referred to according to the necessity.

FIG. 16 shows a procedure of a program synthesizing process executed by the control device 12. When the program table is distributed through on the digital waves, the control device 12 executes this process, and replaces the commercial in the program. The control device 12 checks the commercial in the program table, and synthesizes a new program by replacing this commercial with what is suited to the viewer concerned.

10       At first, the control device 12 reads a CF code of a next commercial from the program table (S62).

Next, the control device 12 obtains an advertiser code from a CF header of this commercial (S63).

15       Next, the control device 12 reads a viewer's attribute from the individual profile 62 of the viewer concerned (S64). For example, an address, an age, a distinction of sex, an annual income, an already-purchased brand and tastes of the viewer, are read out.

20       Next, the control device 12, based on the viewer's attribute, obtains the CF code of the proper commercial from the advertiser/commercial table (S65).

Next, the commercial is replaced based on a content of the obtained CF code, and a new program is thus edited (S66).

25       Next, the control device 12 judges whether the checks of the program table are finished (S67). If all the checks of the program table are not yet finished, the control device 12 returns the control to S62. Whereas if all the checks of the program

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table are finished, the control device 12 finishes the program synthesizing process.

As described above, the TV receiver 10 in this embodiment previously selects the content of the commercial suited to the viewer, and replaces the program commercial with this. It is therefore possible to make the viewer watch the program containing the commercial suited to the viewer by avoiding the deterioration of the image and the deficiency of the processing time due to the replacement of the commercial.

10      <Modified Example>

The TV receiver 10 in the embodiment described above selects the commercial based on the individual profile 62 of the viewer. The embodiment of the present invention is not, however, limited to this procedure. For example, a commercial selection code is predetermined based on the viewer's attribute. On the other hand, the content of each commercial is given a predetermined identification code (see FIG. 10). Then, a content of the identification code coincident with the commercial selection code of the viewer, may be selected as a commercial for the replacement.

FIG. 17 shows the procedure of this program synthesizing process. In this process, the steps other than S64a and S65a are the same as those in FIG. 16. Then, the same steps are marked with the same symbols, and their explanations are omitted.

25      In the process in FIG. 17, in S64a, the control device 12 reads a commercial selection code of the viewer concerned from the individual profile 62.

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Next, the control device 12 searches for a CF header containing the identification code coincident with the commercial selection code (S65a). Then, a new program is edited by replacing the commercial based on the content of the obtained  
5 identification code (S66).

In this example, the commercial selection process based on the judgement of the identification code is shown in the form of the flowchart. This function may be implemented as a program of the control device 12 or may also be implemented as hardware  
10 through a logical circuit with gates combined.

<<Readable-by-Computer Recording Medium>>

A program for providing the function of the control device 12 illustrated in the embodiments described above can be recorded on a readable-by-computer recording medium. Then, the computer  
15 reads and executes the control program on this recording medium, thereby making it possible to function as the control device 12 of the TV receiver 10.

Herein, the readable-by-computer recording medium embraces recording mediums capable of storing information such  
20 as data, programs, etc. electrically, magnetically, optically and mechanically or by chemical action, which can be all read by the computer. What is demountable out of the computer among those recording mediums may be, e.g., a flexible disk, a magneto-optic disk, a CD-ROM, a CD-R/W, a DVD, a DAT, an 8mm  
25 tape, a memory card, etc..

Further, a hard disk, a ROM (Read Only Memory) and so on are classified as fixed type recording mediums within the

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computer.

<<Data Communication Signal Embodied in Carrier Wave>>

Furthermore, the above program may be stored in the hard disk and the memory of the computer, and downloaded to other  
5 computers via communication media. In this case, the program is transmitted as data communication signals embodied in carrier waves via the communication media. Then, the computer downloaded with this program can be made to function as the control device 12 of the TV receiver 10 in the embodiments discussed  
10 above.

Herein, the communication media may be any one of a coaxial cable and a twisted pair cable, optical communication cables, satellite communications, ground wave wireless communications, etc.

15 Further, the carrier waves may be DC signals, and the data communication signal embodied on the carrier wave may be any one of a modulated broadband signal and an unmodulated base band signal.

20 Industrial Applicability

The present invention can be embodied in an industry of manufacturing the receiver such as the TV receiver etc for receiving the digital broadcasts and in a service industry of providing the contents through the digital broadcasts.

WHAT IS CLAIMED IS:

1. A television program broadcasting method in a given local area, comprising:

storing a memory in a television receiver with a television  
5 program of a digital broadcast received;  
editing a program in a fixed period of time by synthesizing  
with other television program; and  
repeatedly broadcasting said edited program.

10 2. A television program broadcasting method in a given local area according to claim 1, wherein said other television program is a commercial.

3. A television program broadcasting method in a given  
15 local area according to claim 1, wherein said other television program is a commercial, and

the commercial can be selected from among those stored  
beforehand in said memory and can be replaced with a commercial  
in said synthesized program.

20

4. A television program broadcasting method in a given local area according to any one of claims 1, 2 and 3, wherein said television program broadcasting method is carried out in an on-demand system.

25

5. A television receiver for receiving digital broadcasting waves, comprising:

a memory for storing a plurality of first contents  
received; and

a control unit,

wherein said control unit, when receiving a second content,  
5 selects one or more contents from among said plurality of first  
contents on the basis of a predetermined criterion, outputs said  
selected first contents at a predetermined timing, and gets a  
program composed of said first content and said second content  
watched.

10

6. A television receiver according to claim 5, wherein  
said first content is a commercial, and

said predetermined criterion is determined based on an  
attribute of a viewer.

15

7. A television receiver according to claim 5, further  
comprising a timer for informing of the predetermined timing.

8. A television receiver according to claim 5, wherein  
20 said control unit detects a piece of timing information informing  
of the predetermined timing from the digital broadcasting waves.

9. A television receiver receiving digital broadcasting  
waves, comprising:

25 a memory for storing a content of a digital broadcast  
received; and

a control unit,

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wherein said control unit edits a program content by synthesizing a first content with a second content, and, gets the program content watched repeatedly.

5           10. A television receiver according to claim 9, wherein said memory further stores relating information that relates said first content and said second content to each other, and said control unit synthesizes said first content with said second content in accordance with the relating information.

10

11. A television receiver according to claim 9, wherein said memory further stores a selecting criterion for selecting said first content, and

15           said control unit, based on this selecting criterion, selects one or more contents from among a plurality of first contents stored beforehand in said memory, and synthesizes said selected contents with said second content.

12. A television receiver according to claim 9, wherein  
20 said first content is a commercial,

          said second content contains a commercial,

          said memory stores a selecting criterion for selecting one or more commercials from among a plurality of commercials, and

25           said control unit, based on this selecting criterion, selects one or more commercials from among the plurality of commercials stored beforehand in said memory, and replaces the



commercial contained in said second content with said selected commercial.

13. A readable-by-computer recording medium recorded with  
5 a program executed by a computer to which a television receiving unit is connected, said program comprising:

a step of storing a plurality of first contents received;

a step of selecting one or more contents from among said plurality of first contents on the basis of a predetermined  
10 criterion; and

a step of outputting, when receiving said second content, said selected first contents at a predetermined timing,

wherein a program composed of said first content and said second content is watched.

15

14. A readable-by-computer recording medium recorded with a program according to claim 13, wherein said first content is a commercial, and

said predetermined criterion is determined based on an  
20 attribute of a viewer.

15. A readable-by-computer recording medium recorded with a program according to claim 13, further comprising a step of starting up of a timer informing of the predetermined timing.

25

16. A readable-by-computer recording medium recorded with a program according to claim 13, further comprising a step of

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detecting a piece of timing information of the predetermined timing from digital broadcasting waves.

17. A readable-by-computer recording medium recorded with  
5 a program executed by a computer to which a television receiving unit is connected, said program comprising:  
a step of storing a memory with a content received;  
a step of editing a program by synthesizing a first content stored in said memory with a second content; and  
10 a step of getting the program content watched repeatedly.

18. A readable-by-computer recording medium recorded with a program according to claim 17, further comprising: a step of referring to relating information that relates said first content  
15 and said second content to each other; and  
a step of synthesizing said first content with said second content in accordance with the relating information.

19. A readable-by-computer recording medium recorded with  
20 a program according to claim 17, further comprising a step of referring to a selecting criterion for selecting one or more contents from among a plurality of first contents; and  
a step of selecting, based on this selecting criterion, one or more contents from among said plurality of first contents,  
25 wherein said first content selected is synthesized with said second content.

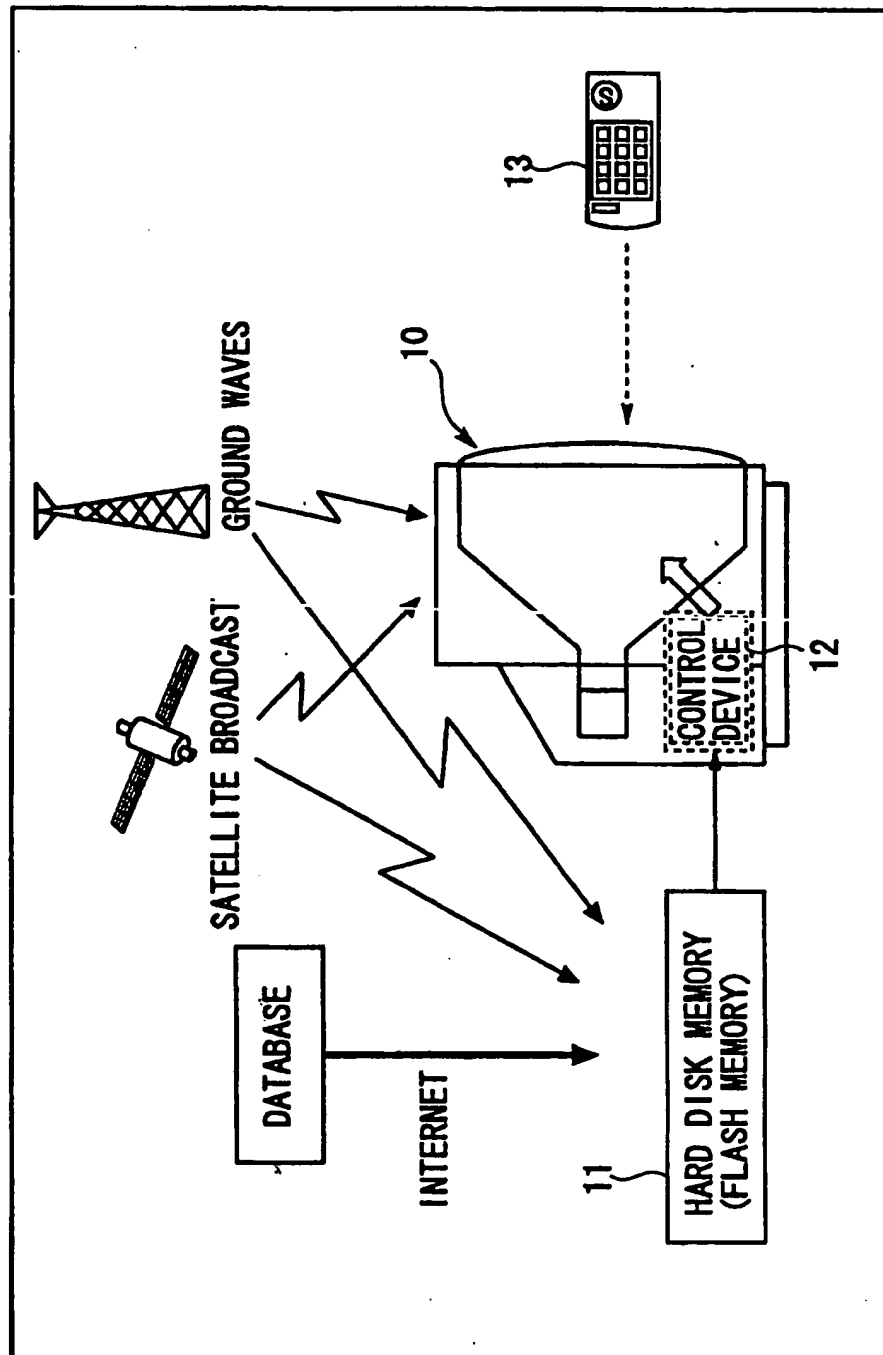
20. A readable-by-computer recording medium recorded with a program according to claim 17, wherein said first content is a commercial,

5       said second content contains a commercial, said program further comprising a step of referring to a selecting criterion for selecting one or more commercials from among a plurality of commercials, and selecting, based on this selecting criterion, one or more commercials from among the plurality of commercials, and  
10       the commercial contained in said second content is replaced with said selected commercial.

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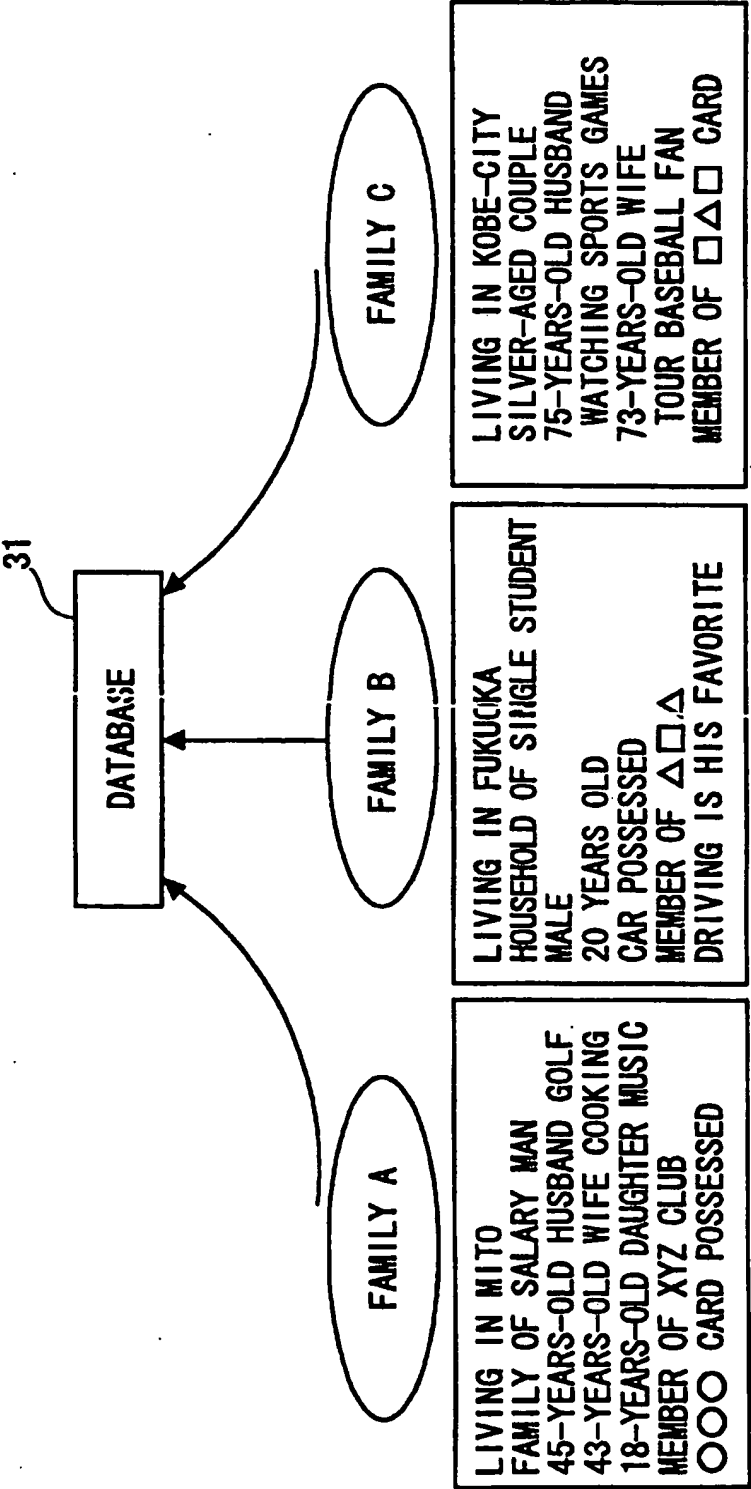
FIG. 1





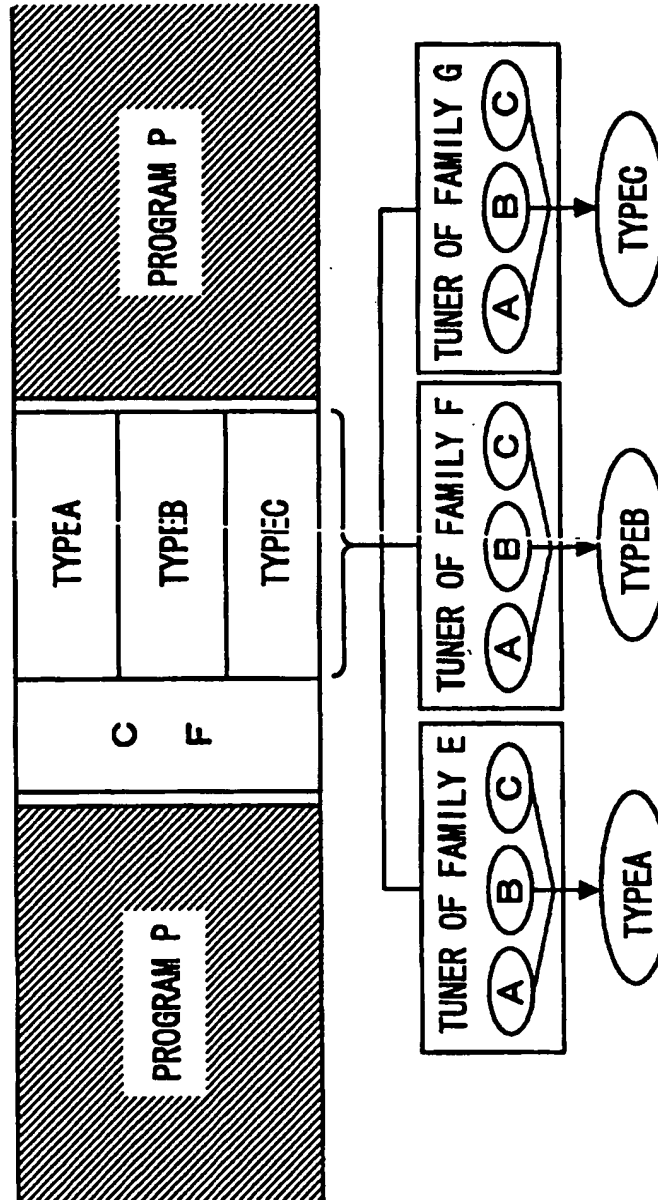
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FIG. 3



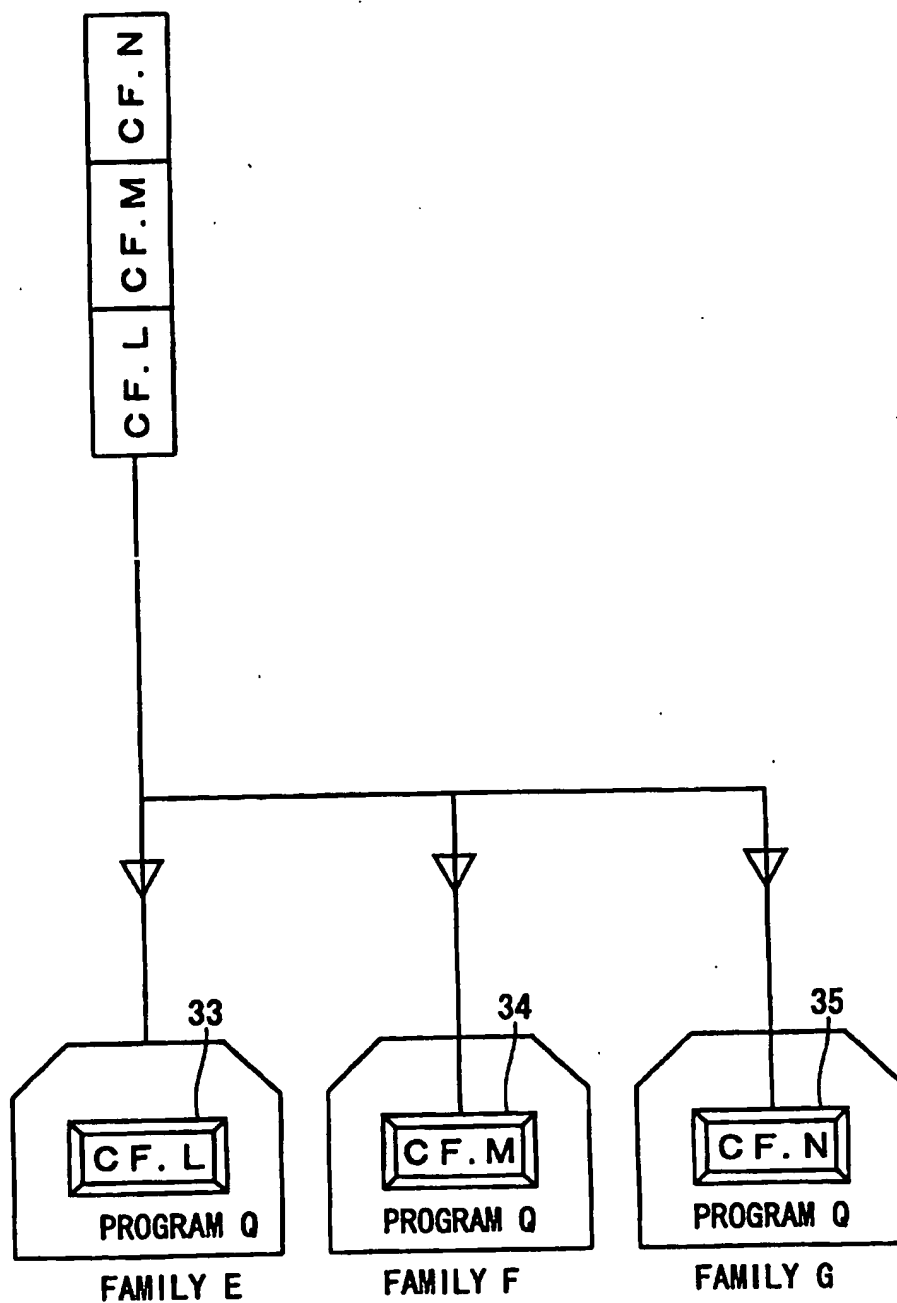
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FIG. 4



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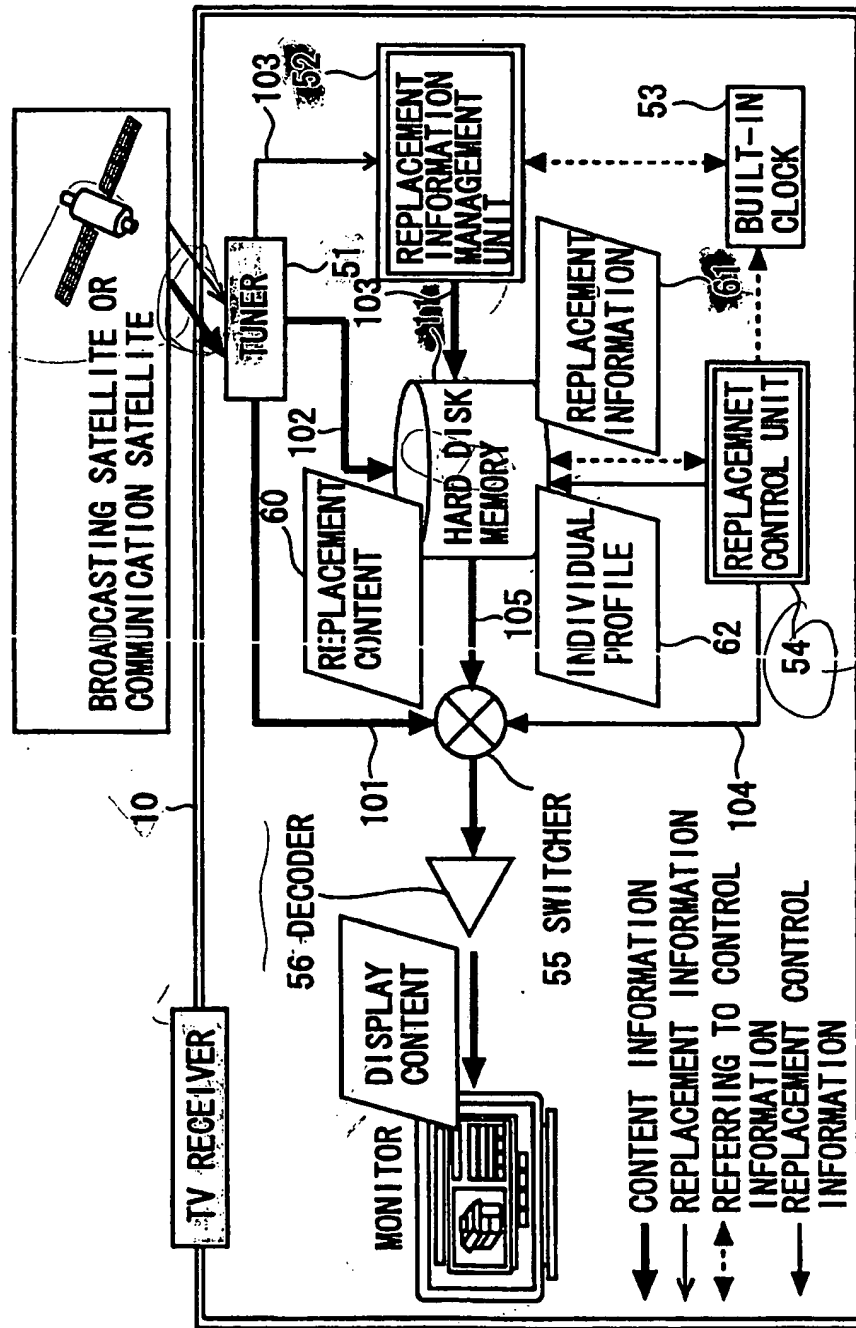
FIG. 5





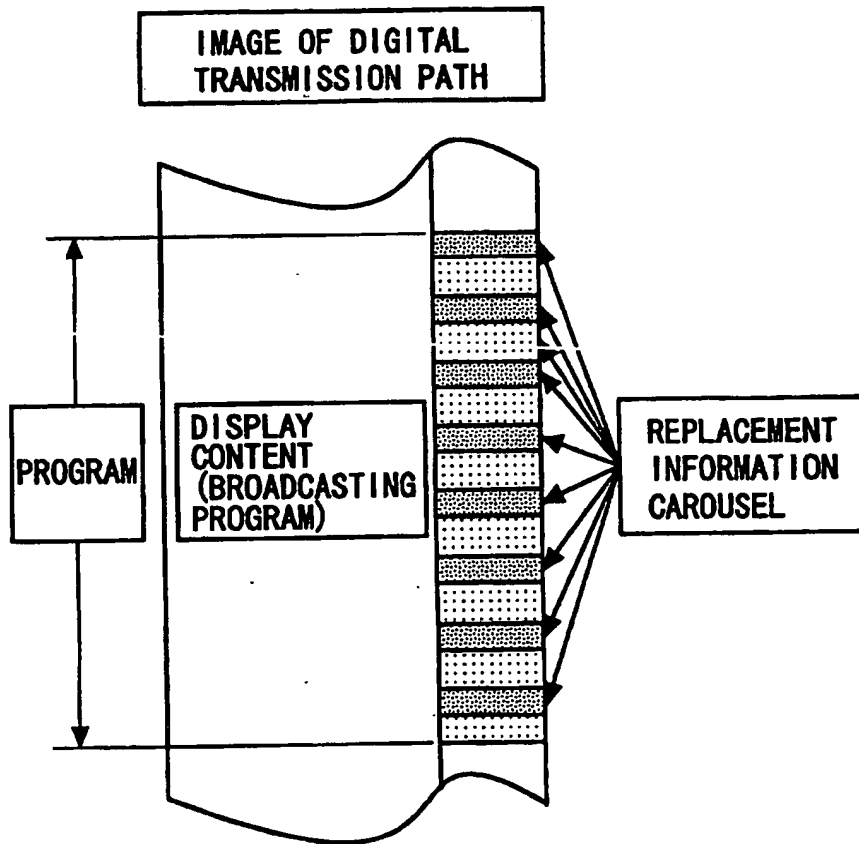
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FIG. 6



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FIG. 7



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FIG. 8

PROGRAM TABLE			
STARTING TIME	TELEVISIONING TIME (SEC)	CONTENT CODE	EXPLANATION
0:00	1800	SP001	FIRST HALF OF PROGRAM
0:30	120	CF101	ADVERTISEMENT
0:32	1500	SP002	SECOND HALF OF PROGRAM
0:57	180	CF200	ADVERTISEMENT
• • •	• • •	• • •	• • •



*10/17*

*FIG. 10*

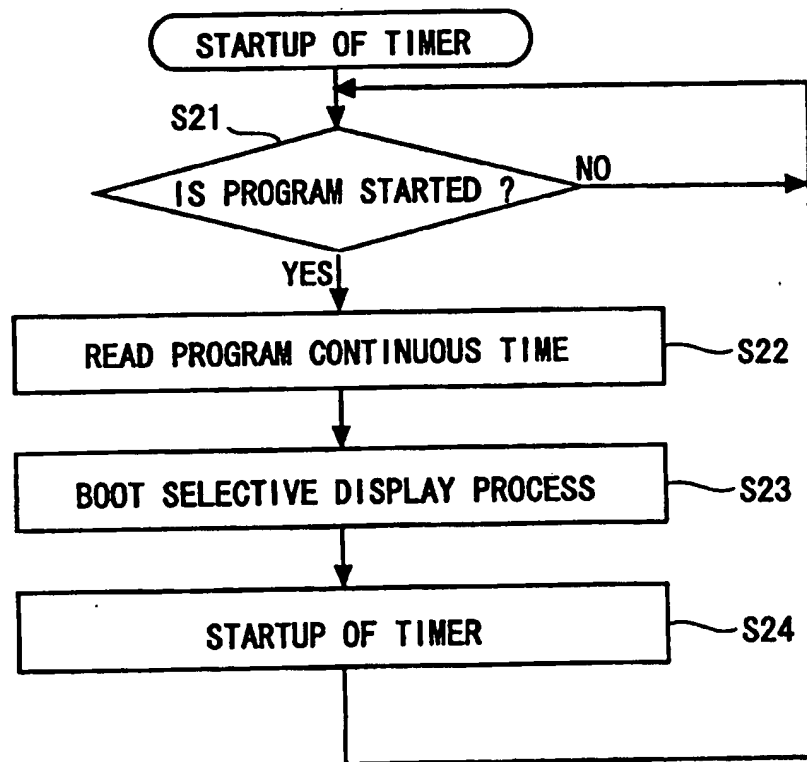
CF HEADER INFORMATION
CF CODE
IDENTIFICATION CODE
ADVERTISER CODE
TELEVISIONING TIME
ADVERTISEMENT PERIOD
POINTER TO CONTENT

*11/17**FIG. 11*

CLUSTER OF DIETARY HABITS	
CLUSTER	ADDRESS
1	YOKOHAMA
	TOKYO
	SAITAMA
2	NAGOYA
	GIFU
3	OSAKA
	KYOTO
	KOBE
	NARA
4	HAKATA
	KITA-KYUSHU
5	OKINAWA

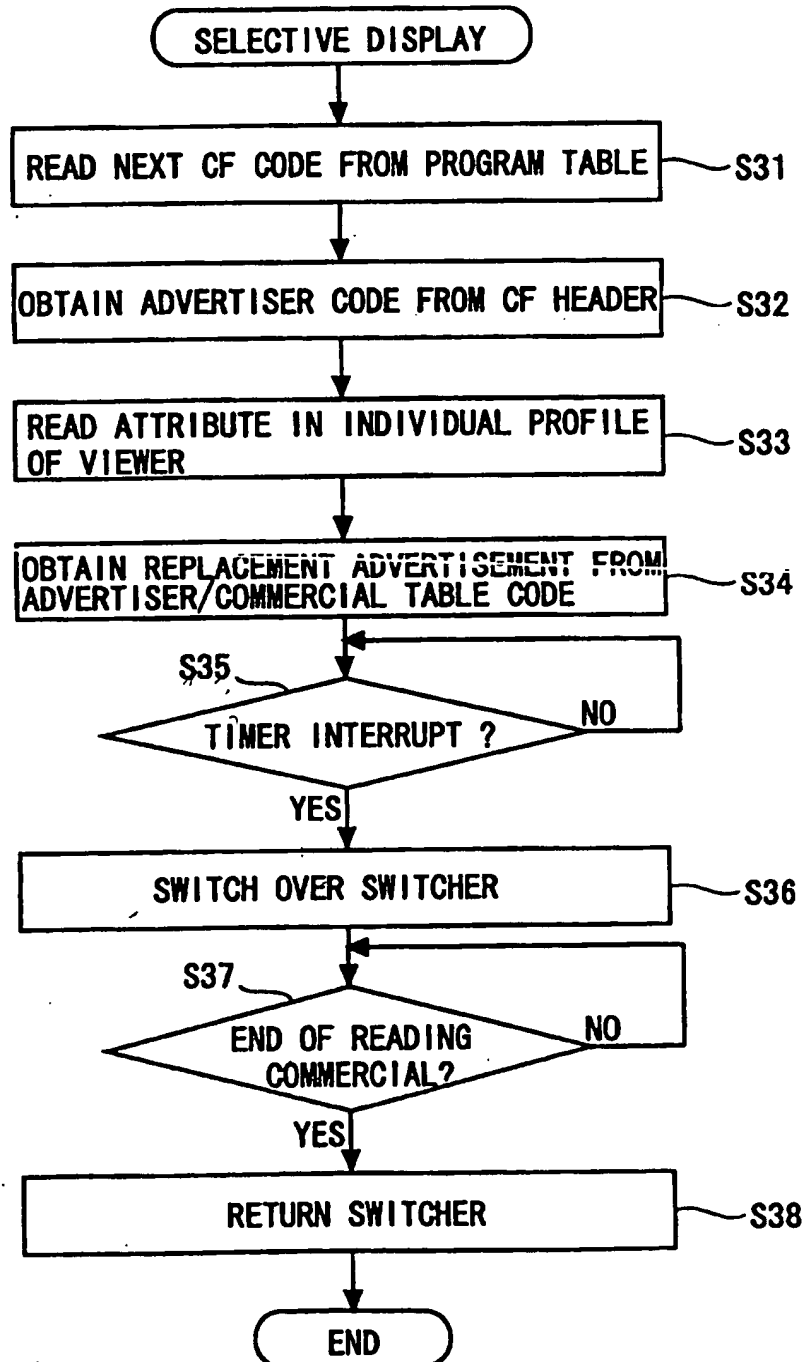
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FIG. 12



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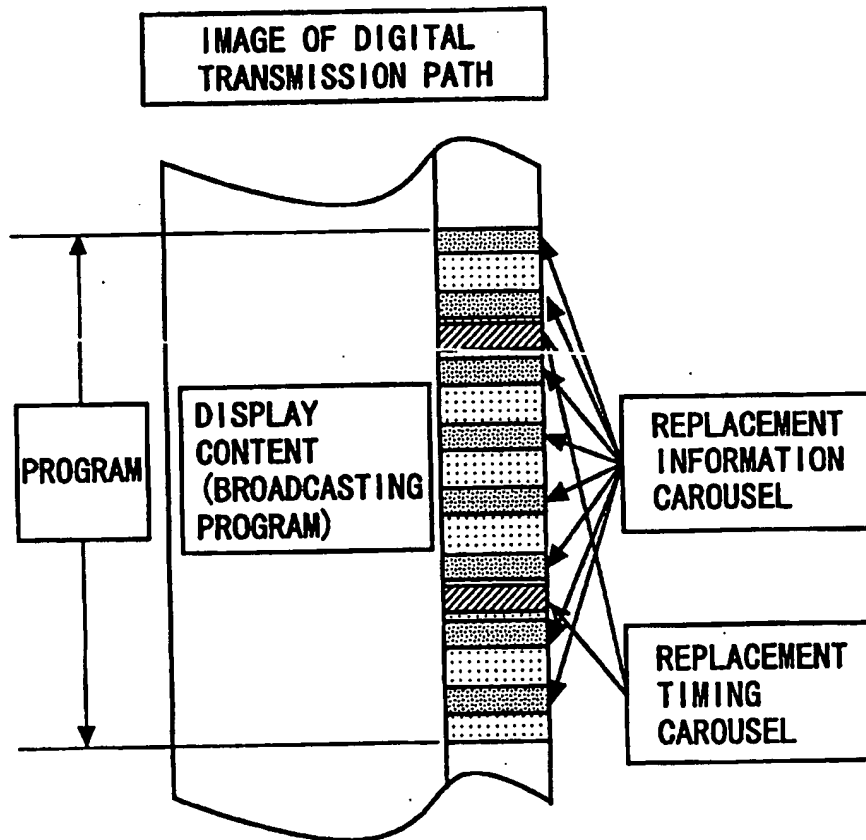
FIG. 13





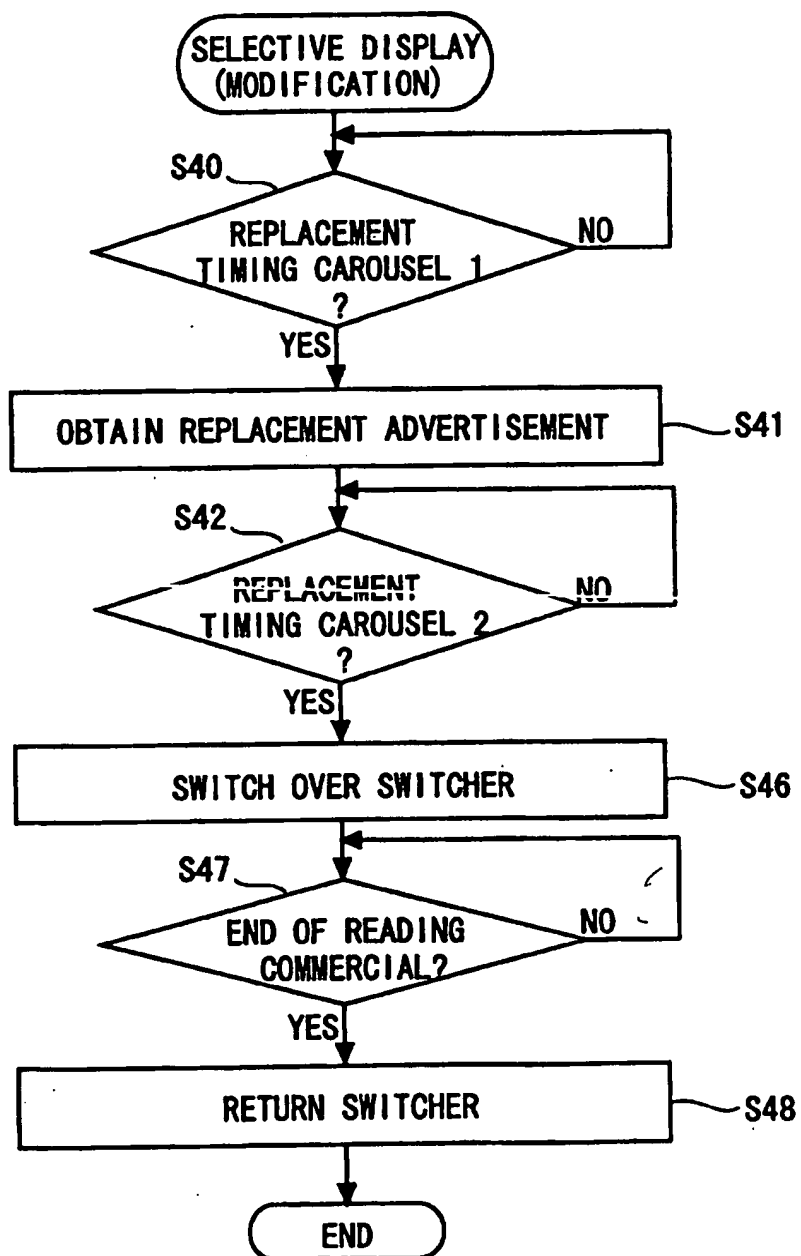
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FIG. 14



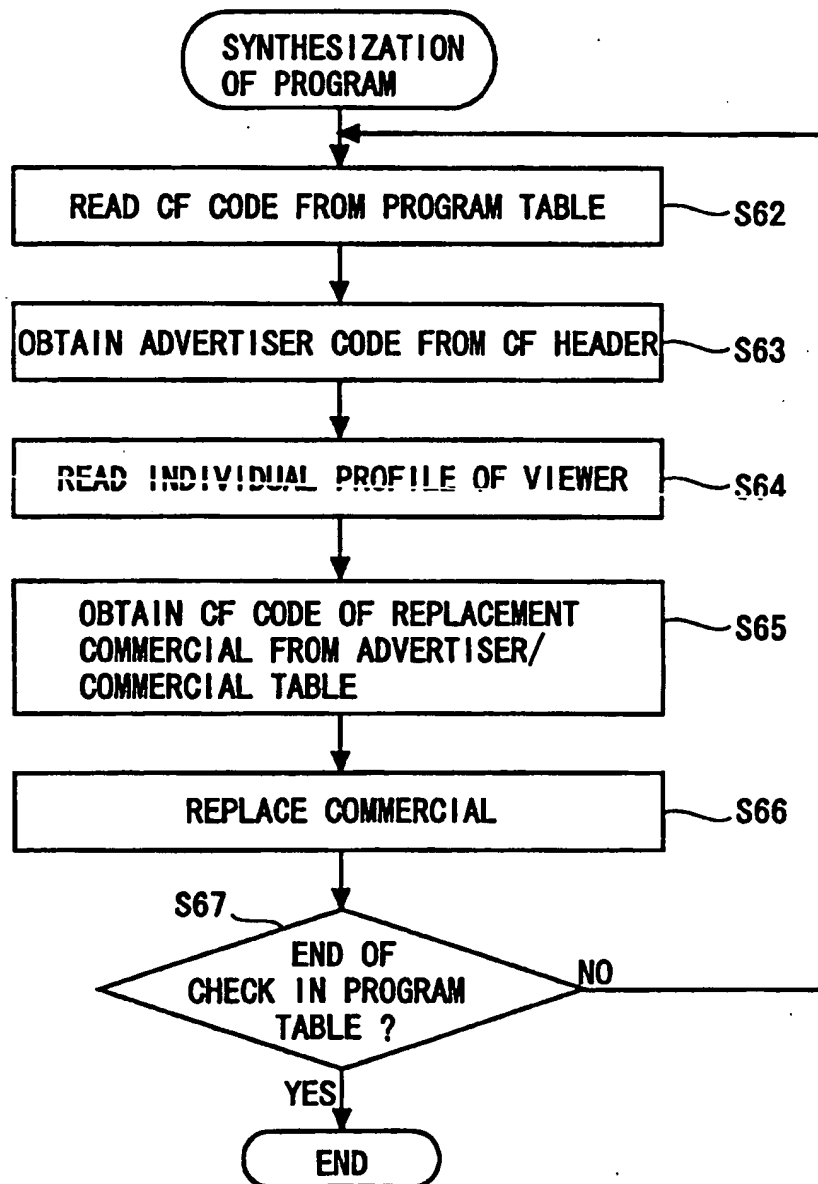
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FIG. 15



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FIG. 16



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FIG. 17

